

PRESS – «Plant Response to Stress» – is a **mandatory** online course for students of the Masters Program in Plant Sciences, starting in winter 2006/2007, which is offered by the Zurich-Basel Plant Science Center.

PRESS will provide students from three universities (University of Zurich, ETH Zurich, and University of Basel) with an **interdisciplinary** introduction into the field of Plant Sciences and an overview over **Plant Responses to Stress**, integrating the approaches of **Molecular Biology**, **Plant Physiology**, and **Ecology**.

This new online course allows students to become familiar with the basics of research in Plant Sciences and to prepare for further studies in this field. It consists of nine lessons for **self-study** and contains several **interactive** and **multimedia-based elements**, such as video sequences, animations, interactive exercises, and an innovative and highly interactive simulation tool (VEP) with which students can design field experiments virtually and compare the design scenarios for several research questions.

2 credit points (60 learning hours)

Contents of «Plant Response to Stress»

- **Lesson 1:** The Stress Concept in Biology
- **Lesson 2:** Stress at the Cellular Level – Responses to Oxidative Stress
- **Lesson 3:** Stress Responses at the Cellular and Molecular Level: Gene Regulation and Gene Expression after Drought and Temperature Stress
- **Lesson 4:** Stress Responses at the Whole-Plant Level - Responses to Drought
- **Lesson 5:** Stress at the Population Level - Responses to Drought and Density Stress
- **Lesson 6:** Plant Stress at the Community Level - Responses to Biotic Factors Causing Plant Stress
- **Lesson 7:** Stress Implications at the Ecosystem Level - Responses to Drought
- **Lesson 8:** Investigation in Plant Response to Stress Requires Different Research Skills. Laboratory techniques used in plant stress research are presented in short film sequences: Methods of 'Genomics', 'Proteomics', 'Pathogen Recognition and Response' and 'Ecosystem Research'.

Our Quality Approach

- Two-stage editing process
- Student feedback from detailed tests
- Information architecture of each lesson was revised by acknowledged experts



Instructional Design

MODULARITY - Each lesson can be worked through independently. However, all lessons are interconnected.

SELF-PACED LEARNING - Thanks to detailed material for distance learning.

MULTIMEDIA - Maximum learner benefit by combination of several modes of training. The course provides demonstrative graphs, animations and video sequences, simulation material, interactive exercises commensurate with text.

EXPOSITORY LEARNING:

- Advanced Organizer for each learning unit. Elaborate PDF scripts reinforce the content of the summaries.
- Mind Maps help to make interconnections.
- Interactive exercises with expert answers and self-assessments allow students practicing.

ACTIVE TEXT COMPREHENSION AND DISCOVERY

LEARNING - through 'Assignments': Students write essays about complex problems. For this, they have to interconnect what they learned and independently extract additional information out of texts.

EXPERIMENTS - Students can carry out experiments in the 'Virtual Experiment Platform' (VEP), the simulation tool which is part of the course.

Sustainability

- We use **dLCMS** (dynamics Learning Content Management System, ETH Zurich) to be able to easily update and expand our contents.
- **dLCMS** features international standards for exporting contents as Content Packages (IMS, SCORM).
- For further information on **dLCMS** contact: Samuel Schluep, schluep@ethz.ch

Our Network

The course «Plant Response to Stress» is developed for the **Zürich-Basel Plant Science Center**, an interdisciplinary association of eight institutes of the ETH Zurich, the University of Zurich and the University of Basel.

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